

# PATENT ABSTRACTS OF JAPAN

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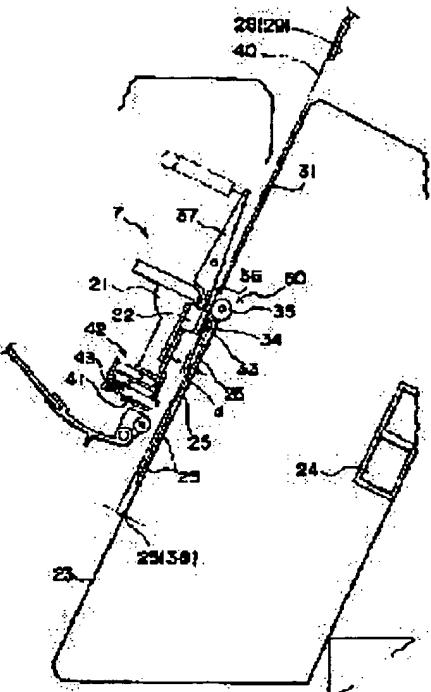
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## (54) LARGE PRINTER

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a large printer having a slant paper transfer path which facilitates registering of a leading end of a paper necessary when printing on the paper.

**SOLUTION:** In the large printer, a paper feed part, a printing part 7 and a delivered paper stack part are arranged in a positional relationship of upper, middle and lower positions. A paper transfer path running from the paper feed part through the printing part to the delivered paper stack part is formed nearly straight from a diagonally upper depth to a diagonally lower front of the printer. A sucking means 25 for sucking a paper from a rear face and limiting the paper not to separate from a transfer face is set to the paper transfer face at the downstream side of a printing head 22 of the paper transfer path. When a leading end of the paper is inserted from diagonally above to the paper transfer path of the slant structure and passed through a print area of the printing part for registration, the leading end side of the paper is held by the sucking means 25 tightly in a flat state to the position, and therefore can be registered easily.



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CLAIMS

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[Claim(s)]

[Claim 1] The feed section, the printing section, and the delivery stack section are arranged at the physical relationship of the upper inside and the bottom. In the large-sized printer by which the form conveyance path of going to said delivery stack section through said printing section from said feed section is formed in the near side of a slanting lower part almost straightly from the upper slanting back side. The large-sized printer characterized by forming an attraction means to control that attract a form from a tooth back and a form separates from a conveyance side in the form conveyance side in the downstream of the print head of said form conveyance path.

[Claim 2] It is the large-sized printer characterized by, as for the paper feed roller arranged in the upstream of the print head of said form conveyance path, forming a follower roller possible [ attachment and detachment ] relatively to a driving roller in claim 1, and forming the alignment at the head of a form so that it may be carried out, after said both rollers have separated.

[Claim 3] It is the large-sized printer characterized by for an attraction means making small attraction opening a unit, putting it in order in claim 1 or 2, and being constituted.

[Claim 4] It is the large-sized printer characterized by the lowest style location of the attraction field of said attraction means serving as the horizontal line for the head alignment of a form in either of claims 1-3.

[Claim 5] It is the large-sized printer characterized by the maximum side edge location of the attraction field of said attraction means serving as the vertical line for the alignment of the lengthwise direction of a form in claim 4.

[Claim 6] It be the large-sized printer which be form in a back possible [ suspension ] through the front face and top face of said feed section from the part in which the single part sheet with said large-sized form conveyance path be prepared in said attraction means in either of claims 1 - 5 , and be characterize by be constitute so that this head alignment of a single part sheet large-sized in the state of suspension may be perform .

[Claim 7] It is the large-sized printer characterized by constituting said feed section possible [ feeding of a roll sheet other than a single part sheet ] in either of claims 1-6.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001] [Field of the Invention] This invention relates to the large-sized printer which uses a roll sheet, especially the large-sized printer constituted so that the delivery roller in the printing section might be lost.

[0002]

[Description of the Prior Art] As a large-sized printer for printing in the large-sized printer which uses a roll sheet, especially a large-sized form with a width of face of 420mm or more The feed section, the printing section, and the delivery stack section have been arranged at the physical relationship of the upper inside and the bottom, and the applicant for this patent applied for that by which the form conveyance path of going to said delivery stack section through said printing section from said feed section is formed almost straightly in the near side of a slanting lower part from the upper slanting back side previously.

[0003] [Problem(s) to be Solved by the Invention] By the large-sized printer of the above-mentioned slanting structure, when a form conveyance path prints in the above large-sized forms, first, it needs to insert the head of the form in a form conveyance path from the slanting upper part, needs to pass the printing area of the printing section, and needs to carry out alignment at the head of a form.

[0004] A form conveyance path is the large-sized printer of slanting structure, and the technical problem of this invention is to offer the large-sized printer which can perform alignment at the required head of a form easily, when printing in a form.

[0005] [Means for Solving the Problem] In order to attain the above-mentioned technical problem,

invention of a publication to this application claim 1 The feed section, the printing section, and the delivery stack section are arranged at the physical relationship of the upper inside and the bottom. In the large-sized printer by which the form conveyance path of going to said delivery stack section through said printing section from said feed section is formed in the near side of a slanting lower part almost straightly from the upper slanting back side it is characterized by forming an attraction means to control that attract a form from a tooth back, and a form separates from a conveyance side in the form conveyance side in the downstream of the print head of said form conveyance path.

[0006] Since a form head side is firmly held in the condition flat in the location by said attraction means in case according to this invention a form conveyance path inserts the head of a form in a form conveyance path from the slanting upper part, passes the printing area of the printing section and carries out alignment at the head of a form by the large-sized printer of slanting structure, the head alignment can be performed easily. Although it will bend if the position of a form is not held especially compulsorily in the case of a form with the weak waist (single part sheet especially with the weak waist), and alignment is difficult, since a form with such the weak waist is also held firmly, according to the invention in this application, the alignment can be performed easily.

[0007] Moreover, it is characterized by, as for the paper feed roller arranged in this application claim 2 by the upstream of the print head of said form conveyance path in the large-sized printer by which invention of a publication was indicated by claim 1, forming a follower roller possible [ the attachment-and-detachment possibility of, i.e., a release, ] relatively to a driving roller, and forming the alignment at the head of a form so that said both rollers may be performed in the state of the left release.

[0008] Although it is especially the case of a single part sheet since the form concerned is held by said attraction means in the location after insert while be easy to insert a form since said paper feed roller can be perform in the state of a release in case according to this invention the head of a form is insert in a form conveyance path from the slanting upper part and the printing area of the printing section is pass, there is no possibility of fall carelessly from the form conveyance path of slanting structure . Furthermore, it much more becomes easy to carry out alignment at the head of a form.

[0009] Moreover, as for an attraction means, invention given in this application claim 3 is characterized by putting it in order and being constituted by making small attraction opening into a unit in the large-sized printer indicated by claim 1 or 2, according to this invention -- structure -- it can simplify and the attraction section of an attraction means can be formed. [0010] Moreover, invention given in this application claim 4 is characterized by the lowest style location of the attraction field of said attraction means serving as the horizontal line for the head alignment of a form in the large-sized printer indicated by either of claims 1-3. Since the horizontal line used as the criteria of the alignment at the head of a form has suction capacity according to this invention, attitude control is carried out evenly, without coming floating to the tip of a form, and precise alignment is possible.

[0011] Moreover, invention given in this application claim 5 is characterized by the maximum side edge location of the attraction field of said attraction means serving as the vertical line for the alignment of the lengthwise direction of a form in the large-sized printer indicated by claim 4, and is \*\*. According to this invention, precise alignment can be easily performed by the vertical line concerned about the side of a form as well as said horizontal line.

[0012] moreover, invention given in this application claim 6 be characterize by form said form conveyance path in a back possible [ suspension ] through the front face and top face of said feed section from the part in which the large-sized single part sheet be prepared in said attraction means , and constitute it so that this head alignment of a single part sheet large-sized in the state of suspension can be perform in the large-sized printer indicated by either of claims 1 - 5.

[0013] According to this invention, when printing to a quite large-sized single part sheet, the form must be first set to a printer, but the set condition can be easily set by changing into said suspension condition. And when carrying out alignment at the head of a form in the state of the set and it is going to return a form head to the upstream for a while, since [ by which said suspension part is based on the self-weight ] it pulls and the force is done, it can return by the light force. Moreover, since the total weight of a form is not moves at a stretch according to an operation of said suspension part at the downstream also when making the downstream move a form head to reverse, it can be made to be able to move easily by the light force, it can have, and alignment can be performed easily.

[0014] Moreover, invention given in this application claim 7 is characterized by constituting said feed section possible [ feeding of a roll sheet other than a single part sheet ] in the large-sized printer indicated by either of claims 1-6. According to this invention, with the attraction means concerned, also when carrying out head alignment of a roll sheet, since it is firmly held in the condition with a form head flat in the location, the head alignment can be performed easily.

[0015] [Embodyment of the Invention] Hereafter, the gestalt of operation of the invention in this application is explained based on a drawing. Drawing 1 is drawing having shown the structure of the conveyance side before and behind the printing section of the large-sized printer concerning the gestalt of 1 operation of this invention, and the printing section which is in the form conveyance path at accuracy, drawing 2 is the outline front view of the large-sized printer

concerned, and drawing\_3 is outline drawing of longitudinal section of the large-sized printer concerned.

[0016] As the large-sized printer concerning the gestalt of this operation was shown in drawing\_3, the feed section 30, the printing section 7, and the delivery stack section 8 are arranged at the physical relationship of the upper inside and the bottom. And the form conveyance path of going to said delivery stack section 8 through said printing section 7 from said feed section 30 is formed in the near side of a slanting lower part almost straightly from the upper slanting back side. The feed section 30 concerned can feed paper to both single part sheets 40 (drawing\_1) containing a roll sheet 3 and rigid large-sized cardboard. As it is attached so that it can remove in the feed section 30 with two spindles 4 and 5 at the time of exchange, and the single part sheet 40 was shown in drawing\_1 specifically, the roll sheet 3 is constituted so that it can set by laying using the slant face by the side of the front face of the feed section 30. With the gestalt of this operation, the roll-sheet covering 28 prepared in the front face of the roll sheet 3 with which it was equipped is formed so that it may serve as the support section 29 in the set condition of said single part sheet 40.

[0017] The printing section 7 has the flat feed guide 31 which acts as a form conveyance side in the upstream of the print head 22, and the flat delivery guide 23 which acts as a form conveyance side in the downstream while having the printing section which consists of the platen 33 (drawing\_1) which countered the print head 22 of an ink jet type, and this, and has been arranged. With the gestalt of this operation, the form conveyance side in the upstream of the print head 22 by this feed guide 31 and the form conveyance side in the downstream of the print head 22 by the delivery guide 23 are established with a level difference d (refer to drawing\_1), and have level difference structure which the direction of the form conveyance side in the downstream of a print head 7 went down to the back side.

[0018] Based on drawing\_1, the structure of the above-mentioned printing section 7 is explained in more detail. As for the form conveyance side in the upstream of the print head 22 by the above-mentioned feed guide 31, and the form conveyance side in the downstream of the print head 22 by the delivery guide 23, the level difference d is established by two or more ribs 34 which Namely, the form installation side of this platen 33 is determined by two or more ribs 34 which protruded on the top face of a platen 33, and, as for the level of the delivery guide 23, only the level difference d is lowered almost identically to this rib 34 to the back side by the level of the feed guide 31 from this.

[0019] And the attraction opening 25 which changes from two or more stomata opened for free passage by the attraction room (not shown) to the delivery guide 23 in the downstream of a print head 22 can be formed, a form 40 can be attracted from a tooth-back side through this attraction opening 25 with the suction force by the attraction fan 24, the relief of a form can be stopped, and it can change into a flat condition, and can hold now to a form conveyance side firmly. It is arranged and formed in a longitudinal direction, predetermined spacing is opened with the gestalt of this operation, and this attraction opening 25 is 5 successive-installation eclipse \*\*\*\*\* to width. This attraction opening 25 constitutes an attraction means with the above-mentioned attraction room and the attraction fan 24.

[0020] It was shown in drawing\_1 -- as -- the pair of a print head 22 and a platen 33 -- immediately, the feed roller 50 is arranged, and while this consists of the pair of a driving roller 35 and the follower roller 36, the follower roller 36 is formed in the upstream of a driving roller [attachment and detachment] by the rotation lever 37. This attachment-and-detachment device is needed for making here (release condition) easy to separate the follower roller 36 from the feed roller 35, and to pass through here, in case alignment of the form is carried out. That is, the head alignment of a form inserts the head of a form 40 in a form conveyance path from the slanting upper part, passes the printing area (under a print head 22) of the printing section 7, and it is formed so that it may be carried out by doubling this form head by the horizontal line 38 as a set mark on the delivery guide 23. Here, the horizontal line 38 is the thing of the lowest style location of the train of the attraction opening 25 which constitutes an attraction means, and is made to serve a double purpose (refer to drawing\_1 and drawing\_2). Furthermore, as shown in drawing\_2, the vertical line 39 for the alignment of the lengthwise direction of a form 40 is the

thing of the maximum side edge location (the gestalt of this operation right side edge) of the attraction field of an attraction means, and is made to serve a double purpose. And since the follower roller 36 is made to approach a driving roller 35 and carries out nip after this alignment is completed, a driving roller 35 is reversed, a form head is returned, and a printing starting position is stopped. Here, the horizontal line 38 and the vertical line 39 as a set mark play the role which prevents skew conveyance of a form beforehand by performing alignment at the head of a form using these.

[0021] Said feed section 30 consists of gestalten of this operation possible [ feeding of a roll sheet 3 other than a single part sheet 40 ], as shown in drawing\_3. And the roll sheet 3 sent out to the form conveyance path is cut for every printing unit by the cutter 41 which only fixed distance separated from the print head 22 to the downstream of a print head 22, and has been arranged at the cartridge 21 in the place of predetermined die length. In the case of the gestalt of this operation, the cutter 41 has composition which resists the return spring 43 by the solenoid 42, and is driven from the near side of a conveyance side to a back side.

[0022] Moreover, the delivery stack section 8 be a part which receive the printed form, and of the delivery change-over lever 26, it guide a form [ finishing / printing / in develop the stack cloth 27 in the front face of a printer at the time of the mark exception of a roll sheet 3 ] to the body lower part of a printer, or at the time of printing of rigid cardboard, it be form so that it may be made to evacuate to the location ( location of drawing\_3 ) which do not become the hindrance of breakdown of rigid cardboard.

[0023] Next, based on drawing\_1 and drawing\_2, an operation of the large-sized printer concerning the gestalt of this operation is explained by making into an example the case where a single part sheet 40 is printed. since a form head side be firmly hold in the condition flat in the location with the attraction opening 25 which constitute said attraction means in case according to the gestalt of this operation a form conveyance path insert the head of a form 40 in a form conveyance path from the slanting upper part, pass the printing area of the printing section 7 and carry out alignment at the head of a form by the large-sized printer of slanting structure, the head alignment can be perform easily. Although it will bend if the position of a form is not held especially compulsorily in the case of a single part sheet with the weak waist, and alignment is difficult, since a form with such the weak waist is also held firmly, according to the gestalt of this operation, the alignment can be performed easily.

[0024] Moreover, since that in which the paper feed roller 50 arranged in the upstream of a print head 22 is formed possible [ the attachment-and-detachment possibility of, i.e., a release, ] relatively can perform said paper feed roller 50 in the state of a release in case it inserts the head of a form 40 in a form conveyance path from the slanting upper part and passes the printing area of the printing section 7, it tends to insert a form 40. And since the form 40 concerned is held by the attraction means (attraction opening 25) in the location after inserting, it is especially the case of a single part sheet, but while there is no possibility of falling carelessly from the form conveyance path of slanting structure, it much more becomes easy to carry out alignment at the head of a form.

[0025] Moreover, since the horizontal line 38 used as the criteria of the alignment at the head of a form has suction capacity, attitude control of that to which the lowest style location of the attraction field of an attraction means serves as the horizontal line 38 for the head alignment of a form 40 is carried out evenly, without coming floating to the tip of a form 40, and precise alignment is possible for it. Moreover, that to which the maximum side edge location of the attraction field of said attraction means serves as the vertical line 39 for the alignment of the lengthwise direction of a form 40 can perform precise alignment easily by the vertical line 39 concerned about the side of a form 40 as well as said horizontal line 38.

[0026] Moreover, with the attraction means concerned, also when carrying out head alignment of a roll sheet 3, since it is firmly held in the condition with a form head flat in the location, what said feed section 30 consists of possible [ feeding of a roll sheet 3 other than a single part sheet 40 ] can perform the head alignment easily.

[0027] Next, based on drawing\_3, the gestalt of other operations of this invention is explained.

[suspension] through roll-sheet covering 28 front face and the top face 16 of a body of the feed section 30 from attraction opening 25 part in which the large-sized single part sheet 51 was formed in said attraction means. That is, it is formed so that the back of a body can also be used as a form conveyance path from the top face 16 of a body. And it is constituted so that this head alignment of the single part sheet 51 large-sized in the state of suspension can be performed.

[0028] The large-sized form 51 concerned can be set easily [a printer] by setting the back end side of this form in the state of suspension using the top face 16 of a printer body to that back, although it cannot set to the front-face side of a printer as it is like the form 40 of the magnitude shown in drawing 1 when printing to the quite large-sized single part sheet 51, as shown in drawing 3, according to the gestalt of this operation. And when carrying out alignment at the head of a form in the state of the set and it is going to return a form head to the upstream of the conveyance direction for a while, since [by which said suspension part (back end side of 51 of a form) is based on the self-weight] it pulls and the force is done, it can return by the light force. Moreover, since the total weight of a form 51 is not moves at a stretch according to an operation of said suspension part at the downstream also when making the downstream move a form head to reverse, it can be made to be able to move easily by the light force, it can have, and alignment can be performed easily.

[0029] [Effect of the Invention] According to this invention, when a form conveyance path prints in a form by the large-sized printer of slanting structure, alignment at the required head of a form can be performed easily. That is, since a form head side is firmly held in the condition flat in the location by the attraction means concerning this invention in case a form conveyance path inserts the head of a form in a form conveyance path from the slanting upper part, passes the printing area of the printing section and carries out alignment at the head of a form by the large-sized printer of slanting structure, the head alignment can be performed easily. Although it will bend if the position of a form is not held especially compulsorily in the case of a single part sheet with the weak waist, etc., and alignment is difficult, since a form with such the weak waist is also held firmly, according to the invention in this application, the alignment can be performed easily.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the sectional view having shown the structure of the conveyance side of the printing section of the large-sized printer concerning the gestalt of 1 operation of this invention.

[Drawing 2] It is the outline front view of the large-sized printer concerning this invention.

[Drawing 3] It is outline drawing of longitudinal section of the large-sized printer concerning this invention.

### [Description of Notations]

3 Roll Sheet

7 Printing Section

8 Delivery Stack Section

16 Top Face of Body

22 Print Head (Printing Section)

23 Delivery Guide

24 Attraction Fan (Attraction Means)

25 Attraction Opening (Attraction Means)

28 Roll-Sheet Covering

30 Feed Section

31 Feed Guide

33 Platen (Printing Section)

35 Driving Roller

36 Follower Roller

38 Horizontal Line (Set Mark)

39 Vertical Line (Set Mark)

40 Single Part Sheet

50 Paper Feed Roller

51 Large-sized Single Part Sheet

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[Translation done.]



、構造简单にして吸引手段の吸引部を形成することができる。  
〔0010〕また、本願請求項4に記載の発明は、請求項1～3のいずれかに記載された大型プリンタにおいて、前記吸引手段の吸引領域の最も下流位置は用紙の先端位置合わせ用の横ラインを兼ねることを特徴とするのである。本発明によれば、用紙先端の位置合わせのため、用紙の最端端まで浮き上がることなく平坦に緊勢制御され、精密位置合わせが可能である。  
〔0011〕また、本願請求項5に記載の発明は、請求項4に記載された大型プリンタにおいて、前記吸引手段の吸引領域の最奥端位置は用紙の横方向の位置合わせ用の横ラインを兼ねることを特徴とするのである。本発明によれば、用紙のサイドについても当該横ラインにより前記横ラインと同様に精密な位置合わせを容易に行なう。

【0015】[発明の実施の形態]以下、本願発明の実施の形態を図面に基づいて説明する。図1は本発明の一実施の形態に係る大型プリンタの印刷部、正確にはその用紙搬送経路構造を示した図であり、図2は当該大型プリンタの概観正面図であり、

図3は当該大型プリンタの紙搬送断面図である。  
〔10016〕本実施形態に係る大型プリンタは、図3に示した如く、給紙部30、印刷部7及び排紙スタック部8が上、中及び下の位置関係に配置されている。そして、前記給紙部30から前記印刷部7を経て前記排紙部8に向かう用紙搬送経路が斜め上方の奥側から前方側にかけて、手前側にほぼ直角に形成されている。当該給紙部30は、ロール紙3と大型の剛性直紙を含む单葉用紙40の両方を供給できるものである。具体的には、ロール紙3は、2本のスピンドル4、5により交換用紙40に交換時に取り外しできるように取り付けられており、また単葉用紙40は、図1に示した如く、給紙部30の前面側の斜面をを利用して載置することによりセットでき、前記印刷部7の前面側の斜面をを利用して搬送するよう構成されている。本実施形態のロール紙搬送部8は、接続されたロール紙40の前面に設けられた切替装置7が、前記単葉用紙40のセッティング部29を兼ねるように形成されている。  
〔10017〕印刷部7は、インクジェット式の印字ヘッド

ド 2.2 及びこれに對向して配置されたプラテン 3.3 (図 1) に對向して配置された印字部 1 に、その印字ヘッド 2.2 の上流側における用紙搬送面として作用する平垣な印字部 1.1) から成る印字部 1 有すると共に、その印字ヘッド 2.2 の上流側における用紙搬送面として作用する平垣な印字部 1.1) と、下流側における用紙搬送面として作用する平垣な印字部 1.1) から成る印字部 1 有する。本実験の形態では、この印字部 1.1) による印字ヘッド 2.2 の上流側における用紙搬送面と、印字部 1.1) による印字ヘッド 2.2 の下流側における用紙搬送面とは段差 d (図 1) を持つて設けられ、印字ヘッド 2.2 の下流側における用紙搬送面の方が奥側に下った段差構造となつている。

に於て搬送面の手前側から奥側に駆動される構成となつてゐる。

10021また、掛紙タック部8は、印刷された用紙を受ける部分であり、掛紙切換レバー26によつて、ロール紙3の印刷時にばスタック布27をプリンタ前面に展開したり、印刷済みの用紙をプリンタ本体下部に蔵置したり、或いは、剛性厚紙の印刷時にば剛性厚紙の排出の妨げにならない位置(図3の位置)に逆送させるようにならねばならない。

10027次に、図1及び図2に基いて、本実施の形態の構造を説明する。本実施の形態は、用紙搬送経路大型の單葉用紙51を前記吸引手段が設けられた吸引部25部分から給紙部30のロール紙がバー28前面本体上面16を経て後方に垂下可能に形成され、即ち本体上面16から本体の後方に用紙搬送経路と利用できるようにならねばならない。そして、この垂下部で大型の單葉用紙51の先端位置合わせが行える構成とされる。

10028この実施の形態によれば、図3に示し、かなり大型の單葉用紙51に印刷する場合に、「10028」に示した大きさの用紙40のようにプリンタ前面側に示した大きさの用紙40のよ

用紙搬送路が斜め構造の大型プリンタで、用紙400の先端を用紙搬送路に斜め上方から差し込んで印刷部7の印字頭部を通して用紙先端の位置合わせをする際に、前記吸引手段を構成する吸引口25により用紙先端側がその位置に平垣な状態でしっかりと保持されるため、その先端位置合わせを容易に行なうことができる。特50 送方向の上流側に少し戻すとすると場合には、前記

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部分（用紙の5 1の後端側）がその自重に基づく引つぱり力を及ぼすため、軽い力で戻すことができる。また、逆に用紙先端を下流側に移動させた場合も、前記垂下部分の作用により一気に用紙5 1の全重量が下流側に移動することにはならないので、軽い力で簡単に移動させることができ、もつて位置合わせを容易に行うことができる。

【0029】  
【発明の効果】本発明によれば、用紙搬送経路が斜め構造の大型プリンタで、用紙に印刷する場合に必要な用紙先端の位置合わせを容易に実現する。すなわち、用紙搬送経路に斜め上方から差し込んで印刷側の用紙頭部を通過させて用紙先端の位置合わせをする際に、本発明による吸引手段により用紙先端側がその位置に平坦な状態でしつかりと保持されため、その先端位置合わせを容易に行うことができる。特に、脛の弱い単票用紙等の場合には強制的に用紙の姿勢を保持しないと捲んでしまって位置合わせが難しけが、本発明によれば、このような脣の弱い用紙でもしつかりと保持されるため、その位置合わせが簡単に実現される。

【図面の簡単な説明】  
【図1】本発明の一実施の形態に係る大型プリンタの印刷部の搬送面の構造を示した断面図である。

【図1】

